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AND

**CHAIRMAN
ENERGY TASK FORCE, BUSINESS ROUNDTABLE**

BEFORE THE

**SUBCOMMITTEE ON LABOR, HEALTH AND HUMAN
SERVICES, EDUCATION, AND RELATED AGENCIES**

OF THE

**COMMITTEE ON APPROPRIATIONS
UNITED STATES HOUSE OF REPRESENTATIVES**

ON

**AMERICAN COMPETITIVENESS INITIATIVE
SCIENCE AND MATH EDUCATION**

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Thank you Mr. Chairman, Ranking Member Obey, and all the members of the committee for giving me this opportunity to testify today.

I am Michael Morris, chairman, president and chief executive officer of American Electric Power Company. AEP is the nation's largest electric utility with more than 5 million customers in 11 states. We are the nation's largest generator of electricity, owning more than 36,000 megawatts of capacity, and we also own the nation's largest electricity transmission system, a nearly 39,000-mile network that includes more 765-kilovolt extra-high voltage transmission lines than all other U.S. transmission systems combined. I am appearing on behalf of Business Roundtable, an association of 160 chief executive officers of leading corporations with a combined workforce of more than 10 million employees in the United States and \$4.5 trillion in annual revenues.

As chairman of the Energy Task Force of the Business Roundtable, I will testify on the critical importance of math and science education in the United States. As I ponder the energy challenges that our nation and the world faces today and into the future, it is clear that technology, innovation, and conservation must be part of the solution. For the sake of our nation's security, both national and economic, it remains critical that America lead, if we are to solve these problems.

The answers will come from scientists and engineers, the quiet heroes who may not get the fanfare of Olympic champions, but provide the ingenuity to power our economy. In fact, it may surprise you to know that among Fortune 500 CEOs, more than 20 percent have an engineering degree, more than any other major. I'm not one of those engineers, however, my bachelor's and master's degrees of science are in biology, so I'm keenly interested in and strongly support a science education. And, let me share my strong personal conviction – and that of my Business Roundtable colleagues – that K-12 science and math education must improve now and into the future, if we are to provide a strong foundation for U.S. competitiveness and innovation.

At the outset, I want to express our appreciation to President Bush for his leadership on the American Competitiveness Initiative, to the House Democrats for their Innovation Agenda and to members on both sides of the aisle for their proposals that are focused on issues that address our nation's competitiveness in the world markets. These issues continue to truly enjoy and deserve bipartisan support.

Throughout our nation's history and today, America's technological leadership remains the envy of the world. Through a combination of insight, determination and ingenuity, our innovators have led scientific revolutions that indelibly changed the way we live, work and think. Our international competitors continually tug on our coattails, but our leadership position prevails. And now, as the world seems to move faster and grow smaller, and as constantly evolving technology becomes more and more commonplace in our lives, we again face the challenge of maintaining our leadership role.

These challenges take on many forms. But, in the end, these challenges evolve into a simple idea that we routinely face in business – a supply and demand. As the shifting needs of the world and the workforce require more scientific leadership, we must advocate for, encourage and educate more scientists if America is to remain the leader it is today.

The data is abundant, and I won't go into great detail here, but two alarming statistics illustrate our challenge. One, the approaching retirement of the "baby boom" generation will deplete the current science and engineering workforce by more than fifty percent, and we're not seeing sufficient students trained as engineers and scientists to replace them. Second, if current trends continue, some experts predict that by 2010 more than 90 percent of all scientists and engineers in the world will live in the Asian Continent.

Let me share what we face at AEP. We currently employ more than 1,700 engineers, twenty-two percent of the professional workforce at our company. We hired an

additional 81 engineers last year, but we expect about 240 (14 percent) of our current engineering staff to retire within the next five years and another 340 (20 percent) in the following five years. These retirements will occur at the same time that we are entering the largest period of construction and growth that our company, and industry, has seen in decades. So, AEP has a vested interest in doing what is necessary to ensure that we have a talented pool of engineers and scientists ready to join and contribute to our company.

In recognition of the critical need for additional technical talent, the Business Roundtable came together with 14 other business groups last summer and released “Tapping America’s Potential: The Education for Innovation Initiative.” We galvanized the concerns of the business community and spoke with one voice to recommend a strong and ambitious agenda to address the issue. The centerpiece of our efforts remains the doubling of the number of bachelor’s degrees awarded to U.S. students in science, technology, engineering and math by 2015. Tapping America’s Potential includes five recommendations to achieve this goal, which complement the President’s American Competitiveness Initiative:

- Build public support for making science, technology, engineering and math improvement a national priority;
- Motivate U.S. students and adults to study and enter science, technology, engineering and mathematics careers, with a special effort geared to those in currently underrepresented groups;
- Upgrade K-12 math and science teaching to foster higher student achievement;
- Reform visa and immigration policies to enable the United States to attract and retain the best and brightest science, technology, math and engineering students from around the world to study for advanced degrees and stay to work in the United States; and
- Boost and sustain funding for basic research, especially in the physical sciences and engineering.

I am submitting the entire report for the record.

Since the release of our report, our views have been reinforced by several likeminded groups. “Rising Above the Gathering Storm,” a report by the National Academies of Science, echoed many of our concerns. The American people also continue to voice their understanding of these issues. In recent public opinion research conducted for Business Roundtable, 86 percent of voters said they believe that we must increase the number of workers with a background in science and math or our ability to compete in the world economy will be severely diminished. And we can’t underestimate the potential influence of Tom Friedman’s book, *The World is Flat*, which clearly demonstrates that the U.S. is facing significant new competitors.

American companies are willing to do their part. For example, over the last four years, AEP has contributed nearly \$13 million to fund educational programs. These programs train teachers and provide resources for students from pre-school to the 12th grade. And, we’ve provided another \$8 million to support higher education programs in the 11 states where we operate. This funding is largely focused on science education initiatives like the Engineers of Tomorrow Fund, a West Virginia University program designed to encourage K-12 students in Appalachia to pursue careers in engineering and technical sciences.

As today’s hearing focuses on the K-12 elements of the agenda, let me emphasize that we can’t just focus on simply training scientists and engineers; we must also equip students with the knowledge and skills necessary to meet the demands of the 21st century both in the workplace and at home. That is why the Administration’s focus on making sure all students have a strong grounding in math remains key to our success. For far too many students, not having sufficient early math education has become the barrier to a future not only in science, engineering, and technology, but also in many other fields that require strong quantitative and analytical skills. Similarly, the Advanced Placement program in the American Competitiveness Initiative also makes sense—we need to expect more students, not just the current high achievers, to take challenging courses in

high school. To further strengthen high schools, the Adjunct Teacher Corps will provide a dedicated group of scientists and engineers who are willing to teach science and math to the youth of America.

Outside science and engineering fields, more and more careers call for an education solidly grounded in technical training, and that training requires a good understanding of math, science and technology. Approximately 25 percent of the total employees hired by AEP every year are in technical fields, and we expect that percentage to quickly increase to one-third of all new hires as we require higher levels of technical education for hourly positions in our power plants and for those working on our lines. The bottom line is that improved training in science, technology, engineering and math provides benefits to all students, which will in turn help ensure a productive, innovative workplace – in all fields – for decades to come.

AEP is celebrating its 100th anniversary this year and from our earliest years as a provider of electric, gas, water, steam, and even ice service, our company has been built on innovations. AEP's 100-year history is full of firsts for our industry, starting with the world's first "super" power plant built in 1917 and extending to our current efforts to build the first large-scale, commercial Integrated Gasification Combined Cycle (IGCC) clean-coal power plant. Our firsts have been conceived and executed by generations of bright, inspired engineers and scientists, so we understand the critical importance of supporting and nurturing the next century of innovators.

As AEP recognized more than 20 years ago, we need to support educators in their efforts to make math and science more interesting for students. Since 1985, AEP has sponsored Workshops for Educators focused on giving teachers additional tools to help teach scientific concepts – particularly those related to energy and the environment. Through these workshops, I'm proud to say that we've provided hands-on, science-based teaching tools to more than 3,800 teachers who educate an estimated 250,000 students every year.

We also recognized that students need more than textbook-based education to get excited about science. So, we've invested nearly half of a million dollars (\$470,000 since 1998) in the FIRST and FIRST LEGO League robotics programs that pair elementary through high school students with professional engineers and challenge them to build robots and compete for scholarships. AEP sponsored 43 FIRST and FIRST LEGO teams last year.

And we've provided hundreds of thousands of dollars in support to science learning centers including the Challenger Learning Centers in Ohio, Kentucky, Texas and West Virginia. Built to honor the astronauts who perished in the Challenger explosion, the Challenger Centers give students the opportunity to practice their science skills during mock space shuttle launches and through experiments conducted at a simulated space station.

I speak for the Business Roundtable and others in the business community in saying that we take seriously our responsibility to ensure that we develop the right set of incentives both to encourage students to pursue degrees that provide training needed for our industries, as well as to retain this talent within our companies. We are committed to doing our part – and we value the guidance that your committee, this Congress and this Administration are showing to help secure America's leadership in the future. We believe that the American Competitiveness Initiative can and will play an important and critical role in achieving our goal by complementing other federal, state and local programs that stimulate U.S. student achievement and U.S. innovation.

Thank you for the opportunity to testify this morning. I would be happy to take any questions.